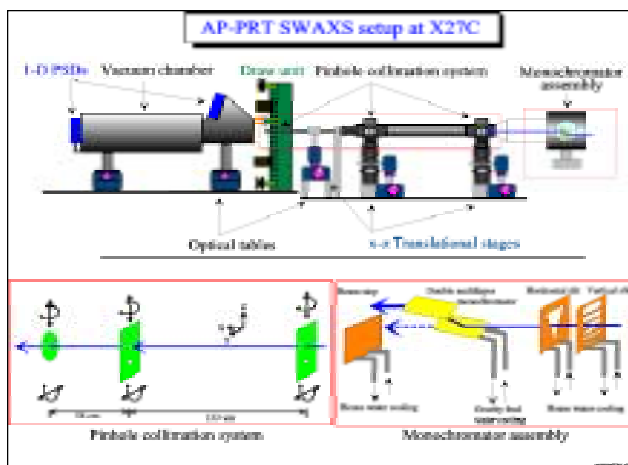


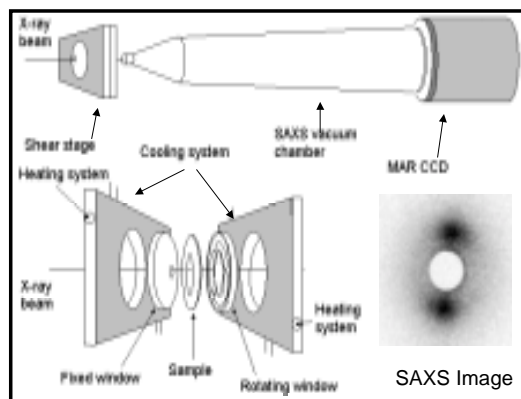
Orientation-Induced Crystallization in Polymers¹

Benjamin S. Hsiao, Chemistry Department

Advanced Polymers Beamline at NSLS, BNL



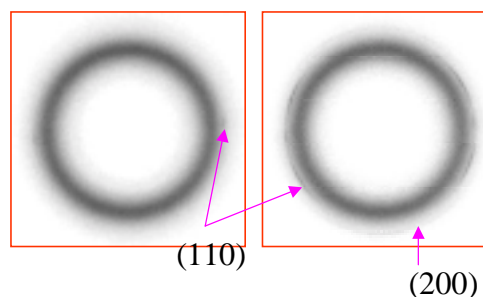
Rheo/X-ray Apparatus²



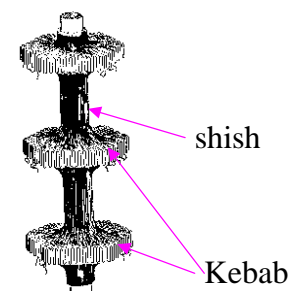
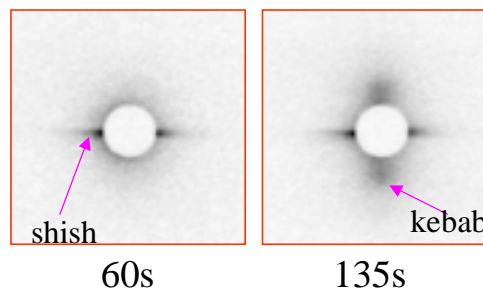
Major Research Accomplishments

- Observed the '*shish-Kebab*' precursor structures during flow-induced melt crystallization for the first time.
- The topology of the precursor scaffold was found to dictate the final morphology in semicrystalline polymers.

WAXD



SAXS



Model polyethylene blends with two Mw's: 100K (90%)/250K (10%)
Shear rate = 60s^{-1} , $t_s = 5\text{s}$, $T = 120^\circ\text{C}$

Contributors in “Orientation-Induced Crystallization in Polymers” Project

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Education

- Ph.D. Students : Bruce Fu (2002), Ling Yang (3rd year)
- Post-docs: Rajesh Somani, Igors Sics, George Wang, Carlos Orta

International Collaboration

- Instituto de Estructura de la Materia, (C.S.I.C.), Spain.
Francisco Balta-Calleja, Aurora Nogales, Tiberio Ezquerro

Academic Collaboration

- Richard S. Stein (University of Massachusetts)

Government Collaboration

- National Institute of Standards and Technology
Charles Han, Howard Wang

Industrial Collaboration

- ExxonMobil
Pawan Agarwal, Hitesh Fruitwala, Rainer Kolb, David Lohse,
Christine Ong, Srivatson Srivinas, Andy Tsou
- Basell USA
Roger Phillips